

LAND USE SURVEY AND ANALYSIS

POPULATION AND ECONOMY STUDY  
AND ATTITUDE SURVEY

WRIGHTSVILLE BEACH,  
NORTH CAROLINA



ABSTRACT 4

**TITLE:** Land Use Survey and Analysis; Population and Economy Study and Attitude Survey, Wrightsville Beach, North Carolina

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**ABSTRACT:** The Wrightsville Beach Land Use Survey and Analysis provides a detailed inventory of the physical land uses, both natural and man-made, within the town and its immediate surrounding area and analyzes this information in terms of various assets and liabilities for the area. The Population and Economy Study and Attitude Survey presents an overview of population and economic growth trends for Wrightsville Beach and its surrounding area with an analysis of the implications of these trends for the town of Wrightsville Beach. The study also offers a series of recommendations designed to help meet the unique developmental problems of the town for the next ten to twenty year period.



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Department of Local Affairs  
Division of Community Planning  
Post Office Box 1991  
Raleigh, N. C. 27607

Town Hall  
Wrightsville Beach, N. C.



LAND USE SURVEY AND ANALYSIS





## INTRODUCTION



## INTRODUCTION

In an effort to provide long-range guide lines for the development of their Town the Board of Aldermen of Wrightsville Beach have entered into an agreement with the North Carolina Department of Local Affairs, Division of Community Planning to produce a series of comprehensive studies. These studies will consist of six elements that will analyze the many aspects of the community which have had a direct influence on its past and can be expected to have an influence on its future development. The first element of these studies will be to provide a detailed inventory of all physical land uses, both natural and man-made, within the town and its immediate surroundings, and analyze this information in terms of its various assets and liabilities.

The second element will consist of an analysis of past, present and future trends in the town's population as well as a breakdown of the major age groups, income levels and occupation types of the town's citizens and visitors. In addition, the town's economy must be analyzed in terms of its seasonal and year-round commercial activities, its service businesses and its potential for economic growth in the next twenty years.

The third phase of these studies will be the preparation of a Land Development Plan for a twenty year period. This plan will indicate the best arrangement and amount of land to be devoted to the various activities of the town, such as residential, commercial, industrial, and public uses.

Fourth, a study will be conducted to analyze the various functions of the town's community-wide facilities such as: fire protection, police protection, water system, sanitary and storm sewer systems, refuse collection and disposal, hospital and other health facilities, school facilities, recreation facilities and libraries. These elements will be compared with standards of towns of similar size and situations and the present system will be evaluated in terms of both the year-round citizens and visitors needs and the long-range expected needs of the future.



Finally, no amount of long-range planning can be expected to develop the best aspects of a community unless the proper means are available to implement the recommendations. In the case of community-wide improvement an important tool for proper development is a well understood zoning ordinance that will provide the legal support for land development over the years. A reevaluation of the present zoning ordinance will be the last element to be considered in this series of studies.





## BACKGROUND INFORMATION

Early Development  
Site Characteristics  
Population  
Economy



## BACKGROUND INFORMATION

### Early Development

Wrightsville Beach was incorporated as a town in 1899. As such it was one of the earliest, if not the earliest, on the North Carolina coast to be established as a resort community. By 1910 there was a permanent population of 54 with several hundred visitors during the summer. Also between 1905 and 1909 the W. and W. Electric Railroad Line was established from Wilmington to Wrightsville Beach island. For many years this electric trolley system was the sole means of transportation from the mainland to the beach other than by boat or foot bridge. This trolley system was supported on a trestle across the marsh areas until it reached the main island. On the main beach the rail turned south at what is presently Newells Department Store and continued to the present site of the Lumina Pavilion. During this early period, the Oceanic, a very large Victorian hotel was built on the island. It was a much celebrated coastal resort motel for many years. During the late twenties this hotel landmark was destroyed in a fire that also burned most of the large cottages on the north end of the island. Later, in the Thirties, Tidewater Power and Light Company built the Lumina Pavilion that still exists today. The Lumina was built to encourage visitors to use the trolley system and was quite successful during the "big band" era.

With the advent of the automobile it was only a matter of time before the trolley gave way to a new bridge and the private car. It is significant to note at this point that the south side of Harbor Island was created from an early dredge-fill process and that the layout and design of the lots, concrete streets and sidewalks were constructed long before the first automobile bridge was started. These same streets and walks are still in use at present. When the trolley tracks were eventually taken up, several blocks of track were located on easements which reverted back to the original owners. The



remaining rights-of-way went to the town for a street. This situation accounts for the several existing gaps in Lumina Avenue.

Wrightsville Beach has over the last decade and a half been able to change its character from that of a totally tourist oriented resort to a community that has a responsible year-round population that takes pride in its home town.

The citizens today express a civic pride in the town and this attitude is reflected in the quality of the average visitor and investment that comes to Wrightsville Beach. Many beaches along the North Carolina coast have, in the name of progress, accepted every type of commercial activity until a carnival atmosphere has developed and become the standard. Wrightsville Beach, as a town, began eliminating much of this type of activity in the early Fifties, much to the dismay of many businessmen. As a result the town has built a reputation that sets it apart from most of the other coastal resort areas by its high quality of development.

#### Site Characteristics

The physical configuration of Wrightsville Beach will place many restrictions on its future development. The town is sited on two islands that are connected by two bridges. The inner island (Harboro Island) is connected to the mainland by a third bridge across the Intracoastal Waterway. The outer island, which is the largest and has the greatest concentration of structures, is contained by the Atlantic Ocean on the south side, Masonboro Inlet on the west, Wrightsville Inlet on the east and the Banks Channel on the north. Harbor Island is flanked by salt marshes on two sides, the Banks Channel on the south and the Intracoastal Waterway on the north. This physical character is at once its greatest asset and its greatest liability. The ocean, the sound, the islands, the Intracoastal Waterway and the salt marshes all work together to provide the natural beauty that is the essence of the beach resort community, and provide the atmosphere that thousands of vacationers look forward to visiting all year long. However, in terms of an efficient community with





a large growth potential, these attributes quickly begin to create many problems that will be difficult and expensive to solve properly.

### Population

The population of Wrightsville Beach poses a unique problem in terms of planning and community development for the next twenty year period. The outstanding aspect of this problem is the seasonal fluctuation pattern. In January the town contains a permanent and semi-permanent population of approximately 1,900 to 2,000 persons. However, during the summer season, from June through September, a peak weekend may show as many as 25,000 persons in Wrightsville Beach.

The many implications of this type fluctuation then, must be considered as plans are made which will involve both quality and quantity of services not only for a growing permanent population but also for an ever-increasing tourist and semi-permanent population.

### Permanent Population

#### Town of Wrightsville Beach: Straight Line Projection

1899	Incorporated
1900 -	22
1910 -	54
1920 -	20
1930 -	109
1940 -	252
1950 -	711
1960 -	723 <sup>1</sup>
1968 -	1900*
1970 -	1593**

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<sup>1</sup> Source: U. S. Census of Population 1900 - 1960.

\* Estimated population including the 1965 annexation of Harbor Island.

\*\* Denotes preliminary figures for Wrightsville Beach as derived from the 1970 Census of Population.



The economic picture for Wrightsville Beach derives its context from the Town's unique population composition. The two basic groups stimulate two types of economies. One provides a fluctuating seasonal income and the other type is the more typical with a twelve month distribution.

The seasonal economy is most strongly realized during the summer months, June through September. It is during this time period that the vacationer, the tourist and the part-time visitor descend upon Wrightsville Beach. This yearly phenomenon generates the seasonal oriented businesses such as rental housing, motels, eating establishments, boat services, and variety stores and notions shops.

In terms of the Town's year-round economy, Wrightsville Beach lacks an economic base broad enough to offer a significant degree of permanent jobs for its permanent citizens. As a result, a large percentage of both permanent residents and winter-only residents work outside Wrightsville Beach, usually in the Wilmington and New Hanover County areas. However, this particular segment of the population does give the Town a certain degree of year-round economic stability which provides for a comparatively typical distribution of income.

The cogent features of the Wrightsville Beach economy will be further examined and discussed in more depth in the Wrightsville Beach Population and Economy Study and Attitude Survey.



## GEOGRAPHICAL CONSIDERATIONS

Topography  
Surface Drainage  
The Salt Marsh and Land  
Development  
Hurricanes





## GEOGRAPHICAL CONSIDERATIONS

### Topography

The general character of the land in New Hanover County is flat with a maximum elevation in Wilmington of 35 feet above sea level. Wrightsville Beach is no exception with the land being almost entirely flat. The south end of the beach at Masonboro Inlet has a few dunes which are approximately 25 feet high. The rest of the beach and Harbor Island varies from sea level to about twelve to fifteen feet above. The land area one mile beyond the Intracoastal Waterway bridge varies only slightly with a maximum of twenty feet above sea level. The basic difference being that most of the land in this fringe area is heavily wooded and uniformly well above sea level.

Beach erosion has always been a problem in the coastal area since the 1930's. At one time in the middle Thirties, on the northern end of the developed area, there were several more rows of cottages and a boardwalk system that ran parallel to the beach. These cottages and the board walk have long since been washed into the sea.

During hurricane Hazel, in 1954, there was severe damage to the beach and many of the protecting dunes were washed completely away, leaving the community exposed to the threat of another storm. It was after this storm that the U. S. Corp of Army Engineers started a dune stabilization project to rebuild the protective sand walls. This was done by pumping sand from the sound to the beach area. This dune is now complete for the entire length of the beach island, and, in the event of another storm will provide much needed protection.

The north end of the island has experienced erosion of the dune since its construction that will need repair during the coming year (1968-1969). At present there is a sheer bank approximately four feet high cut into this dune and most of the beach grass has been washed away, leaving this area in a much less protected position than the remainder of the beach.



This northern end of the island is now being developed by a dredge-fill process with the land being built up to a level of at least twelve feet above sea level. (The building code requires that land be at least eight and a half feet above sea level before any structure can be built). This area is located behind the dune that is suffering from the worst washing action. It appears that if this type of washing occurs during normal seasonal tides there should be considerable concern in the event of a storm. The improvement of this situation should be given immediate attention in terms of more extensive dune structures and grass stabilization before the number of houses in this area become significant.

#### Surface Drainage

Since the distance to the sound is within a few hundred feet at any point on Wrightsville Beach, all of the rain water that is collected on streets and paved areas is carried very quickly either on the surface or in storm drains into the sound or marsh areas. Also because of the generally sandy soil throughout the town, rain water tends to be absorbed very quickly, causing only small quantities of runoff from non-paved areas.

One problem with this system of drainage is that during excessive rains there are usually higher tides than normal. This causes salt water to back up into the mouth of the storm drains thereby backing up the normal flow of storm drainage. This situation, however, is not considered as serious.

#### Salt Marsh and Land Development

The salt marsh islands which lie between the outer beach island and the mainland was for many years viewed as a useless area, not fit for man or beast, and a general curse because of the mosquitoes that breed there. Boatmen did not like the marsh because of the difficulty in maneuvering and the large number of sand bars. For many years the marshes were considered a



barrier to the development of the beach areas. These marsh islands between the beach and the mainland make up an area that is over twice as large as the presently developed area within the corporate limits of Wrightsville Beach.

Wrightsville Beach will eventually use up all the existing buildable land on the outer island and on Harbor Island. The demand for land within the next twenty years will be such that the pumping of sand and bottom material into the surrounding salt marsh areas to create suitable sites for residential construction will be a strong matter for consideration. Within the Wrightsville Beach corporate limits some fill has taken place, but in no extensive areas. This situation will not remain so for long. On the north end of the outer island a residential development, Shell Island, has been planned and initiated. If realized in its entirety, this development would drain and fill approximately 826 acres of marsh land, making the area suitable for both residential and commercial development. This project, in effect, could double the number of residential units within the community and its one-mile area. Much the same potential for filling and draining salt marshes exists to the south of Harbor Island, and could theoretically provide an almost equal amount of development as the proposed Shell Island project. Thus, it is a distinct possibility that the size of Wrightsville Beach, in both area and population, could triple in a ten to fifteen year period without ever annexing any lands on the mainland side of the Intracoastal Waterway. This prospect must be considered a prominent future developmental issue, and it will be a matter of prime consideration in the Wrightsville Beach Land Development Plan.

#### Hurricanes

The possibilities of a hurricane striking Wrightsville Beach are almost 100 percent. The North Carolina coast is situated in the so called "hurricane belt" and it must be recognized that on an average this part of the coast will be hit by violent winds and abnormally high tides accompanied by large wave action every





five years. Usually these storms come in sets with several hitting in one season.

The North Carolina Coast has been spared any serious damaging storms in the past few years, but it must be assumed that this record will not continue indefinitely.

The Corps of Engineers' study, "Hurricane and Beach Erosion" summarizes hurricane damage to North Carolina beaches as follows: "The major portion of the damage was caused by the interaction of many factors, some of them man-made, to which were added the destructive force of floods and wind. Many hundreds of low buildings along the water's edge were destroyed as a result of flooding, undermining of foundations, and battering of heavy waves and water borne debris. The foundations of many buildings were undermined to the extent that they collapsed completely. Much of the destruction could have been prevented through proper placement and construction of buildings.

"Man-made destruction of the sand dunes was a major cause of much of the damage. Where dunes had been allowed to erode away or had been levelled by bulldozers to provide building sites and direct views of the ocean, the high tides pushed by the hurricanes were able to wash across the protecting barrier beaches, destroy structures, and further erode the dunes and beaches. Beach erosion was most severe in those places where the slope of the beach was too steep to allow the waves to spend their energy gradually.

"A gradual beach slope above the normal high tide line is most dramatically effective in times of severe storms and hurricanes. A gentle beach slope absorbs the energy of high storm waves gradually. Waves can roll up the slope and come to the point of reverse direction easily, rather than tearing and smashing at a steep slope of the ground above the high tide line.

"Poor subdivision platting which permitted lots and streets to be laid out too near the water's edge and without adequate space for a gently sloping beach or a stabilized sand dune was responsible for much of the damage. Adequate subdivision and land-use controls are lacking in many intensively developed beach areas. Over





exploitation of land resources has enhanced nature's power to destroy."

Hurricanes must then be considered as an element of nature that man cannot control, but will from time to time threaten and test Wrightsville Beach to its maximum. This maximum test must be kept in mind during all future development and plans for development.



COMMUNITY FACILITIES

Water System  
Sewerage System



## COMMUNITY FACILITIES

Because element four of the Wrightsville Beach series of studies will consider in some detail all aspects of the community-wide facilities that will be required over a period of years this report will consider only the quantitative aspects of the existing water and sewerage facilities and their relationship to the existing situation.

### Water System

The water source for Wrightsville Beach is supplied from seven wells, working alternately, which are located at scattered points on both the main beach island and Harbor Island. The wells average a depth of 180 feet and produce approximately 175 gallons per minute per well. Treatment of the well water consists of standard chlorination treatment with no aeration system. Storage facilities are provided by two elevated tanks of 300,000 gallons and 70,000 gallons respectively. The water is noted to have a high sulfur content which is especially noticeable during the latter summer months when the demands are high.

Water demands vary from a winter low of 400,000 gallons per day to a maximum of 1,000,000 gallons per day during the peak summer days. At present it is felt by local officials that the daily capacity can be extended to supply approximately 35 to 50 percent more water before the maximum output is reached.

On Harbor Island the Federal Government has an extensive saline test facility which was originally expected to supplement the water supply of the town. This source has not contributed any significant amounts of fresh water in the last few years and therefore should not be counted on for future expansion needs.

### Sewerage System

Sewage treatment consists of primary treatment with aeration and a contact chamber for all materials that are discharged into the sound area. The present plant was constructed just under five years ago and has an estimated treatment capacity of 1,000,000



gallons per day. The maximum daily loads are averaging about 500,000 gallons per day during the summer. It is felt that the substantial difference between the amount of water supplied and the amount of sewage treated is caused by the loss incurred through the use of many outdoor showers and the rinse-off spigots.

Due to the flat terrain five lift stations are needed to complete the collection from all parts of the island with about one and a half miles of force mains.

Collection is available to all residents in the corporate limits and is being provided to each stage of the Shell Island project as it is developed. Several residents on Harbor Island have not been connected to the city services since the 1965 annexation, but these are being connected systematically.





LAND-USE CLASSIFICATION AND  
ANALYSIS



## LAND-USE CLASSIFICATION AND ANALYSIS

### Land Use Categories

An inventory of the various uses of the land in Wrightsville Beach for the purpose of analysis will be necessary. In order to organize the different elements and activities that occur within the community, appropriate categories have been developed to group similar uses. The activities will be grouped into eight major categories.

### Land Use

### Description

#### Residential

Single family dwelling, multi-family dwelling, including duplexes and mobile home, but not including multi-unit commercial structures.

#### Trade

Retail and Wholesale businesses selling both tangible and intangible products, e.g., service stations, grocery stores, department stores, barber shops, banks, boat rentals, motels, hotels, tourist homes and marinas.

#### Industrial

Any manufacturing, processing or assembly plants.

#### Recreational and Social

Public and semi-public uses offering recreation facilities either free, such as the beach shore area or for a fee, such as fishing pier. Also private yacht and beach clubs are included.

#### Governmental

Public land uses, town, state and federal.



## Land Use (Continued)

## Description

Cultural	Public and semi-public uses such as churches, schools, and libraries.
Transportation	Land devoted to transportation purposes such as streets and highways.
Undeveloped Land	Land not used for urban purposes such as privately owned beach areas, marsh areas and buildable lands.

## Residential

The residential character of a beach resort community differs from that of the typical town. In the case of Wrightsville Beach this difference is reflected in both the higher densities and the variation of the size and cost of structures that can be found next to each other. The large majority of residences are built on lots fifty feet wide, which coupled with the fact that the bulk of these cottages are at least forty feet wide and two or three stories high creates a crowding effect. The vacationer is not interested in maintaining a yard on beach property; therefore, the structure is almost the maximum width and often occupies most of the buildable area. This situation has been reenforced because of the lack of desirable building space on the island. In other communities there is usually an economic segregation between families of different incomes. Houses in one area in inland communities tend to cost about the same as others in the same neighborhood.

At present this is not the general case in Wrightsville Beach. A house of \$15,000 value will be found next to a house that is valued for \$100,000, and one man may have a summer home next to someone he would ordinarily not consider as a compatible neighbor. This mixing of income levels plus the lack of available land have kept land values high for the entire town. This situation will show its first signs of change in the development of Shell Island. This development will, if carried to its total completion, establish





an area that will be developed on larger lots, with more expensive houses and most of the homes will be constructed for year-round habitation. This project will create a "neighborhood" that is somewhat uniform in costs, layout and development standards. These new standards will be higher than those at present in Wrightsville Beach, and the per acre cost of land and house will be higher. The project is mentioned here only because it will be a break from the traditional development of the beach and as such may have some effects on latter development standards.

It appears quite likely that the land values on Wrightsville Beach will be maintained because of its present good reputation, general character and the fact that the demand for beach resort property will almost certainly continue to increase.

The difference in the development standards of residential areas can be seen if the beach area is compared to Harbor Island. Harbor Island has been for some time a year-round community and this fact is represented in larger lots, lawns and houses that generally do not reflect the beach atmosphere. This is particularly true of the south east side of the island. It was in fact this year-round aspect that kept the beach from annexing the island during the years before the number of year-round beach residents increased sufficiently.

Generally, it can be said that Wrightsville Beach with its present boundaries has a high standard of quality of residences. This is true when the town is compared to inland communities and particularly true if it is compared to a similar size North Carolina resort community. Wrightsville has the good fortune to attract individuals and families that have been able to make substantial investments in "cottages" and permanent homes.

#### Housing Conditions

Typically houses can be looked at from the street and a determination can be made as to its general condition. Whether it is in standard repair, deteriorating condition or obviously in a





dilapidated condition can usually be determined by a casual observation. This is not the case in a beach resort community. The ocean air, the wind, the sun and salt have a way of "aging" a new structure in a very short time. This "aging" is superficial and the structure is sound, but the "aging" process has the effect of masking new and old structures. Another situation that makes a conditions survey difficult is that most individuals who construct a cottage at the beach want it to "weather" as quickly as possible. Therefore, what may appear as an old house in need of repair may be in effect a substantial beach home.

A survey by the North Carolina Division of Community Planning and the Town's building inspector lists twenty structures that are dilapidated and should be condemned. In addition, the survey listed some 83 structures that were in need of repairs that would be in excess of what would be normal repair and maintenance. This middle category may have been more liberally judged than would normally be the case, but if so it is because of the aforementioned reasons.

### Trade

During maximum population levels in the summer the average resident is not concerned with making any significant purchases. He is in Wrightsville Beach to relax and enjoy his vacation. He is not there to buy a washing machine, a new car, a suit of clothes or any furniture. At most, the vacationer will purchase food stuffs, beach accessories, gasoline for his car and boat, and any household items he neglected to bring along. In this atmosphere it is easy to understand why Wrightsville Beach has a very small business center which offers only a small variety of goods. Economic necessity has decreed that the usual department stores, appliance stores, furniture stores, car dealers and the like cannot survive in this environment and, therefore are to be found no closer than Wilmington.



The general appearance of the beach business area is not particularly pleasant. Newells Department Store, the laundromat, post office and bank have generally the best appearance and arrangement. Also these structures are the newest or most recently renovated. The structures across the intersection are not as well maintained and are in need of some overall attention.

Further north on Lumina Avenue a small commercial grouping is developing on Salisbury Street near the fishing pier. This area too is a collection of gift shops, grills, and a bingo stand, but at present it appears to be well contained in a given area and not likely to expand appreciably.

The only element of commercial activity starting to develop into a strip along a major highway route is on U. S. Highway 76 between the draw bridge and the old bridge. At present the development consists of five service stations, a grocery store, two fish markets, three restaurants and some thirty residences within a one mile strip. If the development continues it will become a one-sided development because of the large acreage owned by the Saline Water Conversion Plant. This part of Harbor Island must be considered as a gateway to the beach and, therefore a very impressionable area to visitors.

The marina complexes at the Intracoastal Waterway and on U. S. 76 are both large businesses and their sites are not objectionable. The only concern for this type of business is that it be kept reasonably orderly in its appearance and not be allowed to store junked boats and old machinery in open areas.

### Industrial

Industry as the manufacturing of a product or some form of processing barely exists in Wrightsville Beach. The Saline Water Conversion Plant has all of the characteristics of a manufacturing plant. Its appearance, size, number of employees and character would put it in an industrial classification except that it is a governmental test facility. Its central location in the center of Harbor Island is certainly imposing, but the plant is sited on





sufficient land area and no objection to the proposed  
therefore, it will not be a bad neighbor to either residential  
or commercial development.

The Nickel Test facility also has the attributes of an  
industry, but is not. Although in a much smaller size,  
does not seem to have any adverse effect on its neighbors.

There are two areas that provide dockage for shrimp boats  
with ice houses and gasoline pumps. These areas are not  
particularly inviting or pleasing to the eye, but could be  
developed into a dock and market place with much appeal to  
vacationing buyers of shrimp and fish.

In general, industrial type uses will not be a problem to  
Wrightsville Beach and similarly few industries will choose to  
locate in the community because of the lack of available land,  
high land costs, and poor connection with major highways. There  
would have to be strong physical reasons, such as an ocean oriented  
product, to justify the establishment of major industry in the  
community.

### Recreational

Since Wrightsville Beach is a resort town and resort towns  
are basically oriented toward recreation it becomes difficult to  
distinguish between those activities that are more commercial in  
nature than recreational. Ocean fishing piers for instance are  
certainly commercial activities that charge a fee, usually, provide  
fishing equipment for rent and a facility for serving food, but  
their ultimate use is for public recreation and are considered  
as such here. Charter fishing boats are in much the same  
classification. Even beach cottages that are rented by the week  
could understandably be classified as recreational in nature.  
In the case of the Salisbury Street pier the secondary structures  
near the parking area will be classified as commercial.

Wrightsville Beach provides very few "formal" recreational  
opportunities. The entire community is a recreation facility,  
but it is a do it yourself type. The beach provides life guards



for all of the beach area and a mobile beach patrol unit which is in radio contact with the guards. The beach strand is the biggest facility that is owned and maintained by the town. The sound provides a suitable area for water skiing and sailing. This area of the sound is extremely active during the summer sailboat races. The U. S. Coast Guard presently maintains a rescue unit at the town hall. This unit is on call for any water emergency, and it serves as a water patrol unit in the more congested areas.

The town also provides two small children's play areas, but there is a definite need for more such units scattered around the community. A formal recreation program should also be considered that would include not only year-round residents, but also the children of vacationers. Along with this the need for a recreation center should be given considerable thought for both summer and winter residents.

#### Governmental

This category would normally not require the use of much land in a typical community. The Town Hall and fire station site, the sewage treatment plant and the trash dump area would be the usual activities listed under government. In addition to these, Wrightsville Beach has a new Coast Guard facility under construction at the south end of the beach which will cover three to four acres. The Saline Water Conversion Plant is by far the largest user of land in the governmental category. This facility occupies approximately 35 acres of land on Harbor Island. This plant will make the acreage for this category high as compared to other similar size communities.

As mentioned in the recreation category the beach area is owned and maintained by the town, but its primary function is for recreation purposes and for this report has been considered as such.





Another area that is of a similar situation is the strip of land between Waynick Boulevard and the sound. Because many cottages lost their waterfront access when Waynick Boulevard was established, riparian rights were extended across the boulevard. This area has become in the past few years a source of contention between property owners, boat owners, daily visitors, dock owners and the Town. As crowds continue to increase some formal rules are going to have to be established and enforced to protect this strip area.

### Cultural

This portion of the community's activities will include the churches and school. There are four churches in town, two on the beach and two on Harbor Island. All four of these institutions represent viable organizations in the town and should be considered as a good incentive toward the development of a continually growing year-round population.

The town's only school is an elementary school which provides classes from one through six. The older children are distributed throughout the county and Wilmington. Grades 7 and 8 are bused to Tileston; 9 and 10 to Roland-Grise Jr. High and grades 11 and 12 attend Haggard High School.

At present the total enrollment of the school is 186. It is estimated that 25 of these students come from the mainland area just across the inland waterway. The six acre school site appears to be sufficient for the school to expand as the need arises. It is not likely that the need for an additional structure will be realized for several years.

### Transportation

The amount of land area devoted to getting man from place to place is relatively high compared to similar size communities on the mainland. The confines of an island and the desire for maximum waterfront footage on both the sound and the ocean have



resulted in an excessive amount of streets. This system is necessary in this situation and should not be considered a problem.

Although the streets are comparatively narrow within many of the residential areas, they are so aligned and so marked as to provide for reasonably good traffic circulation. The use of one-way streets in various congested areas also helps to alleviate the traffic circulation problem. Potential problems do exist in two areas:

- (1) Harbor Island - Many streets have broken pavement which should be re-surfaced as soon as possible.
- (2) The Southern End of the Outer Island - The streets located south of Sunset Avenue off South Lumina Avenue should be paved to insure better street maintenance in this area.

The nearest rail service is in Wilmington, but the City of Wilmington has a regularly scheduled bus which operates between the downtown area and Wrightsville Beach. This facility is extremely convenient for Wilmington visitors to the beach during the summer, but equally important it provides a commuter system for the beach residents that work in Wilmington.

The Intracoastal Waterway with its boats, docks and marinas is also a contributing factor to travel and transportation.

#### Undeveloped Land

Wrightsville Beach island and Harbor Island still have considerable quantities of vacant dry land that is plotted and on the market for sale. Many of these lots are in spots that have been passed over during the years or have historically not been in the most desirable locations. Many are on the major access roads while others have been heretofore inaccessible. The demand for land and the ability to meet the price will eventually result in the development of most of the vacant land. In the meantime many lots will have been dredged, created and sold while these "hold out" or "passed over" lots are slowly being developed.





Some discussion has been given to the potentials of the salt marsh areas in and around the town. There are some 1350 acres of potential land located between the Intracoastal Waterway, Masonboro Inlet, Wrightsville Inlet and the existing corporate limits of the community. As pointed out previously this marsh area will, if developed, be of significant importance to the final character of Wrightsville Beach.

The potential development of the tidal salt marshes will be the biggest factor to influence the growth of Wrightsville Beach over the next two decades and this potential must be used in the best manner and form that is available.

#### One-Mile Area

There is only one entrance by road into Wrightsville Beach and this is across the drawbridge which spans the Intracoastal Waterway. The crossing of this bridge technically brings a person into Wrightsville Beach, but more importantly, this crossing is a physical separation between types of land character and development patterns. On the beach there are few trees, on the mainland large stands of pines predominate; on the mainland sight distances are short while on the beach the sight distance is limited only by the eye. Within the one-mile area houses are scattered while on the beach the density is high. These physical differences are readily apparent to even the most casual observer. It will be these differences in character and attitudes that may cause the Town of Wrightsville Beach to be reluctant to annex land across the Intracoastal Waterway.

To further reinforce this point of view the present mainland densities of residential and commercial development could not justify the extension of community utilities on a cost per unit basis.

The existing residential development that has taken place along U. S. 76 is of poor quality with the majority of homes appearing to be in a deteriorated condition. In addition to





these homes there is a concentration of mobile homes just east of U. S. 76 located on two loop roads. There are approximately fifty mobile units in this area and plotted sites for an equal number.

Within a mile of the mobile home park the density changes to another extreme. A dozen large homes are sited on twenty and thirty acre tracts that cover most of the land between Bradley Creek and U. S. 76. The largest of these homes is the famous Airlie Gardens Plantation. These home sites are rural in nature and do not need to be in a town.

On N. C. 132 the development is sparse with only a few houses per mile. The quality of these homes is somewhat higher than those on U. S. 76, but the density is again lower. There are several new residential developments northeast of N. C. 132 that will be of a high quality in the size of the homes and the building lots. These projects are on large lots with wells and septic tanks and will not be developed to a density high enough to merit community water and sewer.

To the north of the drawbridge area and about a half mile behind the Baby Hospital site there is a large land holding that is the remains of a plantation estate. This tract of land has over 1,000 acres of undeveloped land that extends from the Intra-coastal Waterway to U. S. 17. If this area is properly developed as a unit it could become a resort community in its own right. This sort of development would have a deep and lasting impact on Wrightsville Beach.

The potentials of this one-mile area are great indeed, but it may be more than Wrightsville Beach should expect to take on as a responsibility. New Hanover County has recently established a planning program that hopefully will provide zoning and development standards to much of this area in the near future. It appears that Wrightsville Beach may have all it can do to adequately provide for its potential growth on the ocean side of the waterway.



## SUMMARY



## SUMMARY

This study, in an effort to provide basic planning guideposts for Wrightsville Beach, has presented an inventory of both natural and man-made physical land uses within the town and its immediate surrounding area. In so doing, it has attempted to relate existing land use to a unique and growing population.

In addition to classifying existing uses in Wrightsville Beach, the study has given a general analysis of existing conditions and potential problems in the areas of future land development, population growth and characteristics - both permanent and tourist oriented, and an evaluation of the area of community facilities.



POPULATION AND ECONOMY STUDY  
AND  
ATTITUDE SURVEY





## SECTION I

### OVERVIEW



## OVERVIEW: NEW HANOVER COUNTY AND WRIGHTSVILLE BEACH

The town of Wrightsville Beach is located in New Hanover County, North Carolina, one of the smallest counties in the State. New Hanover, shaped much like a funnel, is almost completely surrounded by water. To the east is the Atlantic Ocean, a magnet for tourists. To the west is the Cape Fear River which provides a deep water route to the Port of Wilmington. The Northern boundary of the county is marked by the Northeast Cape Fear River. Further north lies Pender County, sparsely populated and made up of agricultural and forest lands. Brunswick County is located west of New Hanover. It is a heavily forested area with an economy based chiefly upon Forestry, agriculture, seafood and tourism. The county's strongest single influence upon population and economy is its largest city, Wilmington. U. S. 421 provides access to the industrialized Piedmont section of North Carolina. U. S. 17 is a major north-south highway providing access to North Carolina coastal towns and to the neighboring states of Virginia and South Carolina. U. S. 74, which provides a direct link between Wrightsville Beach and Charlotte, North Carolina, is now undergoing the process of becoming a four-lane highway in the Wrightsville Beach area.

Factors Influencing Urban Development in New Hanover County. The potential for urban development of coastal and estuarine areas in New Hanover County is constantly growing due to increased leisure time and willingness of workers to commute considerable distances to places of employment. With the strengthening of zoning and building codes in New Hanover's coastal areas one can expect to see stronger residential development and growth of small industry within these zones.

The economic impact of the Port of Wilmington upon the city of Wilmington and the county is an important factor. Several thousand jobs are either directly or indirectly related to this particular segment of the economy. The Intracoastal Waterway offers impetus for residential growth, both for permanent and vacation homes in the eastern part of the county.



A further urban impact could be derived with the creation of county wide water and sewerage systems to serve sectors presently outside the incorporated areas of the county. New Hanover County has and is now taking bids from area engineers on a feasibility study for such a system. Should a study show positive results, both industrial and residential development could occur at a very rapid pace.

#### New Hanover: An Orientation Toward Tourism and Recreation

Fishing and many other types of water sports constitute the major recreational activities along the eastern coastline portion of New Hanover County. The beach areas offer increasing potential for selective commercial development. Tourism continues to grow as a major industry in the county. To meet this increasing demand imposed upon the county by both tourists and short-term visitors, private capital is responding with the construction of such facilities as the Blockade Runner Motor Hotel in Wrightsville Beach and the construction of a 150 room Voyager Inn Motel on the Cape Fear waterfront in Wilmington. The coastal towns such as Carolina Beach and Wrightsville Beach can expect to feel the impact of these trends in varying degrees for years to come. One concrete example of this type growth is the present construction of a Holiday Inn Motel in the northern sector of Wrightsville Beach.

#### Population Trends for New Hanover County and Wilmington: The Implications of these Trends for Wrightsville Beach

It is evident that rapid urbanization has occurred and will continue to occur in the four (4) incorporated communities and in the five (5) townships of New Hanover County. Table One (1) presents population growth trends for Wilmington and New Hanover as derived from Census of Population Statistics, estimates of current population, and population projections by the Division of Community Planning.





Table One

POPULATION GROWTH

<u>Date</u>	<u>City of Wilmington</u>	<u>New Hanover County</u>
1940 <sup>1</sup>	33,407	67,935
1950 <sup>1</sup>	45,043	63,272
1960 <sup>1</sup>	44,013	71,742
1965 <sup>2</sup>	54,600	75,657
1970 <sup>3</sup>	59,679	79,572
1980 <sup>3</sup>	75,000	100,000
1985 <sup>3</sup>	82,500	110,000

1 Census of Population, 1960.

2 Estimate, Division of Community Planning.

3 Projection, Division of Community Planning.

Residential Development

Residential growth has been pronounced especially to the north and east of Wilmington and in the beach areas. This is primarily a result of industrial and commercial expansion county-wide. The creation of additional employment opportunities has attracted residents from other areas. The heavy demand for housing, the proximity to places of work, the availability of amenities and other intangible factors will influence the expanding population of New Hanover County to settle in places such as Wrightsville Beach and Carolina Beach as well as in Wilmington or in various rural areas. <sup>1</sup>

Growth Trends for the Wilmington - New Hanover Area as Derived from a 1968 Population Estimate

In August, 1968, the Wilmington - New Hanover County Planning Agency prepared a Population Estimate for its planning area.

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<sup>1</sup> Sources: All the preceding information in this report is a condensation derived from the Land Potential Study, New Hanover County, N. C., Prepared by the Division of Community Planning, February, 1968





The estimation was prepared in connection with an area Urban Transportation Study. This estimate perhaps presents a more realistic growth picture than the figures in Table One.

The population for Wilmington - New Hanover County was derived by obtaining the number of dwelling units in each of the 234 traffic zones and multiplying these units by 3.3 people - the 1960 average dwelling unit density.

According to the results of this study, Wilmington, in August, 1968, had a total population of 51,029, and New Hanover County a total of 82,493. Thus, according to this estimate, the city population increased 13.6 percent during the 1960-68 period while the county increased some 13 percent during this same time period. The estimation indicated that the city's growth was due to natural growth factors as well as to annexation. An interesting note is the fact that the city lost population from its older sectors while gaining population in its fringe areas.

In a February, 1970, interview with the Director of Planning for Wilmington - New Hanover County the following points were raised that have a direct relation to the future development of Wrightsville Beach and its fringe areas.

- (1) Industrial growth is occurring in the North and West of New Hanover.
- (2) The county has enforced zoning up to the Intracoastal Waterway bordering the city limits of Wrightsville Beach.
- (3) The Coastal Zones are designated R-20; no mobile homes or mobile home parks are permitted within these zones. The requirements of this ordinance will affect the quality of residential development in the Wrightsville Beach fringe area.

Implications that can be gained from the above developments are: Wilmington and New Hanover will continue growth as their respective economies and populations continue to expand; residential development will continue toward the Wrightsville Beach area; people will continue to come to Wrightsville Beach to live while working in Wilmington and in the surrounding area; as the



area population increases, short term visitors to Wrightsville Beach will also increase in order to satisfy their recreational and leisure needs.

#### Wrightsville Beach: Population

Although New Hanover County and its chief city, Wilmington should continue to increase in population at a predictable rate and although their respective economic bases should continue to expand and diversify in a comparatively predictable manner the town of Wrightsville Beach will have to come to terms with an unusual population problem and with an economy which is not analogous with the other economies of the town's surrounding areas.

The population of Wrightsville Beach depends on when the question is asked. If the question was asked during January of 1968 the answer would have been approximately 1,900 persons. If the question was asked six months later in June, during the middle of the week the answer would have been approximately 15,000 persons. If the count was made during a peak summer weekend when the weather was good the number could be as high as 25,000 persons. Six months from this peak population period the number will have returned to the 1,900 level. Obviously, the season is the reason. The influx of summer vacationers comes to the beach as regularly as the tide from the ocean except that each year the number of vacationers has increased.

The implications of a community that loses some ninety percent of its population during eight months of the year are considerable when all of the facilities and services that must be provided are considered. Nineteen hundred permanent residents cannot be expected to finance the expenses of a community that has the needs of 20,000 persons. Nor can the less than 2,000 listed property owners realistically bear this tremendous financial load.

The implications of a fluctuating population then, must be considered as one of the main factors of influence in making decisions that will determine quality and quantity of services offered by the community. The main issues evolve around the





question: should Wrightsville Beach become an exclusive, unique residential town or should it explore new possibilities for growth potential in terms of seasonal visitors and tourists?

Using a straight line population projection method, the North Carolina Division of Community Planning forecasts that the present permanent population of Wrightsville Beach will almost double within the next twenty years. This projected profile is presented below in Table Two.

Table Two

<u>Year</u>	<u>Permanent Population County</u>
1940	252
1950	711
1960	723
1968	1900 *
1970	2194 **
1980	2841
1990	3551 <sup>1</sup>

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<sup>1</sup> Source: U. S. Census of Population 1940, 1950, 1960.

\* Estimated population including the 1965 annexation of Harbor Island.

\*\* Preliminary figures from the 1970 Census of Population indicate 1593 persons.

The inherent weakness in the above projection is the fact that the population profile is not broken down as to age, sex, or race. In addition it does not take into account the growth rate and general makeup of the important seasonal populations. There are other important factors to consider in examining the overall population picture of Wrightsville Beach:

(1) The town is unique in Eastern North Carolina in that there are no Blacks permanently located within the corporate limits of the town.

(2) A survey of slightly more than 6 percent of all property owners at Wrightsville Beach indicated an average family size of 3.7 persons - both





seasonal and permanent residents. However, the average family size for permanent residents was 3.1 persons, comparatively small. The survey did indicate a family-type population even with the comparatively large percentages of 1 and 2-member families among permanent residents.

- (3) Responses from permanent residents to the same questionnaire indicated that the largest number of people fall into the 21-65 years age range with only small percentages representing the 0-5 years and over 65 years age ranges.
- (4) The survey sample indicated a comparatively affluent population for both permanent and non-permanent residents:
  - a. Of the Permanent Residents 88 percent had incomes over \$9,000 and 30 percent had incomes over \$19,000.
  - b. Of the Seasonal Residents replying, 73 percent reported incomes of over \$19,000.

One can however, deduce from the projections that Wrightsville Beach will continue to grow at a rather steady pace, and plans for the future must embrace this growth as well as the growth of semi-permanent residents and short-term visitors.

Just as the population of Wrightsville Beach has fluctuated seasonally in the past so it continues to fluctuate in the present. Figures on meter installation and usage for the town reinforce this idea. Carolina Power and Light Company which serves the area supplies the following information from the tabulation of its meter installations:

- (1) In September 1965, Wrightsville Beach had 1120 customers. In September 1969, Wrightsville Beach had 1341 customers. These installations over a four year period indicate a gain of 221 in "on-season" or fall customers.



- (2) In January, 1966, Wrightsville Beach had 1069 customers. In January, 1970, Wrightsville Beach had 1263 customers. These installations over a four year period indicate a gain of 194 "off-season" customers.
- (3) In January, 1969, there were 1194 total customers. In January, 1970, there were 1263 total customers. This indicates a gain, in a single year, for winter installations of 169 customers.

Although the above information is somewhat limited in that individual family members are not counted, it does show a growth pattern year-round as well as a rather constant seasonal fluctuation pattern.

#### Economy: Wrightsville Beach

Wrightsville Beach must fall, if only briefly, into that category of communities that are considered as dependent on one industry. The individuals that operate seasonal oriented businesses such as rental housing, motels, restaurants, boat services and variety stores are certainly dependent on the tourist trade that is generated during the three months of the summer. Each vacation oriented business must work at a maximum during three or four good months of the season and then be prepared to "get by" for the next eight months, or close the business entirely during the winter months. Fortunately, the pre and post summer fishing seasons and the relatively mild Spring and Fall temperatures allow the summer vacation period to be "stretched" somewhat.

Unlike similar size communities the majority of the population, during the summer, does not work at all. The summer resident, whether for a weekend or a month, usually has earned his salary in some other community in which he maintains his permanent residence. Further, he is living at a higher standard than he normally does. His housing is about four times as expensive, he eats more meals at restaurants, he spends more for entertainment and he has an extra eight hours a day of "free" time that must be occupied. The vacationer then is a consumer,





but not a producer or earner. He is a part-time citizen that demands full-time municipal conveniences. He may feel no allegiance to Wrightsville Beach and therefore no responsibility for its problems, but he is indispensable in terms of the community's economy and therefore must be provided for.

There is another segment of the community which lives in the town twelve months a year, but derives its income either in Wilmington or in New Hanover County. These people usually live at the beach because they enjoy its atmosphere year-round and therefore, they are willing to pay city taxes and have a genuine interest in the daily problems of the town. This part of the citizenry provides an economic stability among the permanent residents that gives the town a somewhat more typical distribution of income.

It is obvious that the town lacks a great number of occupations that can provide employment on a full-time basis. The Saline Water Plant employing a total of 59 persons, the Babies Hospital a total of 85, the Nichol Test Center a total of 31, and the Marinas employment of 18 people provide the largest number of existing jobs for the community. In addition the service business of the area provides a limited number of jobs, but there are certainly not enough positions overall to support the bulk of the permanent community.

During the winter months there are a number of rental units and cottages that are occupied by college students and families, teachers, college instructors and a variety of individuals that prefer to live at the beach, but usually work in or around Wilmington. This group of "part-time citizens" usually has to relocate during the summer months because of the higher cost of renting. The significant aspect of this is that these "winter only" residents help to round out the community and give it the life and activity that it needs to help support a resort area during the "off season" months.

Just as there are two basic groups that make up the year-round population of Wrightsville Beach there are two types of economies at work. One is a fluctuating seasonal income while the other is the more typical with a twelve month distribution.



## Interviews With Key Residents of Wrightsville Beach

In a series of subjective interviews, a cross-section of long-time residents expressed their reflections and opinions on trends that have manifested themselves in Wrightsville Beach during the past five-year period. They also expressed their attitudes toward future development problems and their preferences for growth or lack of growth in various intangible areas.

Some notable trends which were mentioned during the course of the interviews were:

- (1) Many houses have been insulated and electric heat installed for year round use.
- (2) Almost all homes and buildings have been generally upgraded.
- (3) Winter rentals have increased while the percentage of college student renters have decreased.
- (4) Wrightsville Beach is losing people who like the "cottage family" beach and gaining visitors who prefer modern hotels and motels.
- (5) The sale of individual lots has been slower during the past five years.
- (6) Winter business has improved to a small degree and shoppers are now more affluent in winter.
- (7) Summer congestion seems to have a negative effect on "regular customers."
- (8) The beach is becoming more "man-oriented" losing its "natural" life-style, and many "older" people are leaving the beach to be replaced by "new" people with different tastes and habits.
- (9) A general upgrading of new residential subdivisions.

Notable needs mentioned by the interviewees included:

- (1) Parking facilities.
- (2) Possible scattered shopping areas.
- (3) Condominium houses and luxury apartments.





- (4) General upgrading of lot sizes in older sections of the beach.
- (5) Modern hotels and motels.
- (6) More public beach.
- (7) Need to practice a "hands off" policy in terms of commercialism.
- (8) Strict zoning control in order to preserve the "old life-style."
- (9) A Public Marina.

These citizens interviewed predicted the following future trends:

- (1) The Shell Island development project will upgrade the northern area of the beach to the "exclusive" residential level.
- (2) The construction of the Holiday Inn Motel will set a new land use pattern.
- (3) Land values will continue at a high premium-especially waterfront property.
- (4) The growth of the University of North Carolina at Wilmington and area industry will have some impact on the year-round population.
- (5) The use of Wrightsville Beach as a convention center would create a space problem and affect the original "life-style" of Wrightsville Beach.



SECTION II

A POPULATION ATTITUDE SURVEY

MARCH, 1970



## A POPULATION ATTITUDE SURVEY

The Wrightsville Beach Planning Board conducted a survey during the month of March, 1970, in order to obtain basic population and economic data to be used in the preparation of future developmental plans for Wrightsville Beach. The survey, using the random sampling method, was conducted by utilizing a written questionnaire and was intended for permanent and seasonal residents including both property owners and non-holders of property.

Utilizing the most recent, available tax listings of property owners, the Planning Board mailed out 190 questionnaires to a random list of property owners. In addition 60 questionnaires were delivered by Planning Board representatives to various civic and church groups in Wrightsville Beach; included in the latter groups were additional property owners.

The entire random sample totaled 250. Over 200 questionnaires went to property owners (both permanent and seasonal residents). Thus slightly over 10 percent of all property owners were sampled from a total of 1,710 list of property holders.

The Planning Board received a return of 112 questionnaires - 60 from permanent residents and 52 from seasonal residents. This constituted a return of 44 percent on the sample of 250. Of the above total, 107 were property owners while 5 were non-property owners. Thus, the Board received a return sample of slightly more than 6 percent of all property owners at Wrightsville Beach. The 60 permanent resident property owners constitute slightly more than a 3 percent sample of the 1,900 year round residents as estimated in a 1968 permanent population count.

Although the 6 percent sample is not a large sample, the method of selecting participants was sufficient enough to derive a relatively scientific random sample which can serve as a useful, supplementary aid in estimating and evaluating both population and economic trends in Wrightsville Beach and its surrounding area for the future.





One inherent weakness of the sample is the fact that it does not adequately deal with that segment of population made up of vacationers, renters, single-day visitors and tourists who play a vital role in the impact that population fluctuation makes upon Wrightsville Beach seasonally.

However, the sample-augmented by key interviews with long-time residents of the town indicates that Wrightsville Beach, although still inundated by summer vacationers and tourists is growing as a permanent town and as a year round beach, and many property owners have a deep interest in the quality of its future development. Thus, the sample should offer a comparatively valid picture of what property owners desire for Wrightsville Beach and what needs will have to be served. This is as it should be, because the property owners will bear the ultimate costs for future development within the town and its surrounding area.

Following is the list of questions used in the survey, a tabulation of replies to each question, and an analysis of these replies in terms of population and economic developmental trends for the town of Wrightsville Beach.

Question No. 1    Do you live in Wrightsville Beach year round?  
Yes                      No

Replies

Permanent	(yes)	60
Seasonal	(no)	<u>52</u>
		112

Permanent residents answered 54 percent of the usable questionnaires while seasonal residents answered 46 percent of the usable samples. Although the percentages are somewhat evenly divided between the two groups, most of the information garnered from the survey seems to reflect the attitudes of those who consider Wrightsville Beach a family beach and a relatively permanent home.



Question No. 2

a. If you live in Wrightsville Beach only part of the year, when do you generally arrive? \_\_\_\_\_ When do you leave? \_\_\_\_\_.

b. How much total time do you generally spend, each year, in Wrightsville Beach? Less than 2 weeks \_\_\_\_\_, 2-4 weeks \_\_\_\_\_, 2-4 months \_\_\_\_\_, 5-9 months \_\_\_\_\_.

<u>a. Arrival Date</u>	<u>Number of Families Arrived</u>	<u>Percentage of Arrival</u>	<u>Departure Date</u>	<u>Number of Families Departed</u>	<u>Percentage of Departure</u>
March			March		
April	4	10%	April		
May	9	23%	May		
June	25	63%	June	2	5%
July			July	2	5%
August	2	4%	August	1	2%
September			September	24	60%
October			October	8	20%
November			November	3	8%
December			December		
January			January		
	<u>40</u>	<u>100%</u>		<u>40</u>	<u>100%</u>

Four who replied were unsure of arrival/departure dates.

The above figures indicate that most seasonal residents—among property holders—arrive in May and June and depart during the months of September and October. This pattern seems to be in keeping with past seasonal population fluctuation trends.



b. Total Time Spent by Seasonal Residents

Replies

<u>Length of Stay</u>	<u>Number</u>	<u>Percent of Replies</u>
Less than 2 weeks	3	6%
2-4 Weeks	7	14%
2-4 Months	25	53%
5-9 Months	12	27%
Total Replies	47	100%

The above figures and percentages show that most of the seasonal residents remain at Wrightsville Beach over a rather extended time period during the summer months. Since the greatest percentage of visitors spend more than two months at Wrightsville Beach, and since the permanent population continues a steady growth, personal and household needs should provide a greater year-around shopping demand in the Wrightsville Beach area.

Question No. 3 In what city do you live when not in Wrightsville?

Replies

The replies to this question included the following cities, Wilmington, Salisbury, Durham, Chapel Hill, Raleigh, Southern Pines, Burgaw, Fremont, Clinton, Asheboro, Rocky Mount, Portsmouth, Virginia, Fayetteville, Greensboro, Southport and Charlottesville, Virginia.

Over 50 percent of the Seasonal Residents sampled indicated Wilmington as their home when not at Wrightsville Beach. The other replies indicated a statewide geographical spread for Seasonal Residents.



Question No. 4 How many persons in your family? How many children are in the 5-21 years old range? How many adults between 21 and 65? How many adults over 65 years of age?

Replies

Permanent (60 Families Reported)

<u>Number of Members In Family</u>	<u>Number of Families Replying</u>	<u>Percent of Permanent Families Replying</u>
1	12	20%
2	15	25%
3	12	20%
4	10	17%
5	8	13%
6	2	3%
7	1	1%
11	1	1%
Totals	60 Families	100%

Average Size Permanent Family 3.1 Persons

Seasonal (50 Families Reported)

<u>Number of Members In Family</u>	<u>Number of Families Replying</u>	<u>Percent of Permanent Families Replying</u>
1	2	4%
2	12	24%
3	5	10%
4	10	20%
5	5	10%
6	6	12%
7	7	14%
8	1	2%
9	1	2%
10	1	2%
Totals	50 Families	100%

Average Size Seasonal Family 4.3 persons.





The comparative average family size indicates that Wrightsville Beach is serving a "family" population. This holds true especially during the summer months when the Seasonal Residents arrive.

#### Age Range for Residents

##### Permanent

	<u>Under 5</u>	<u>5 to 21</u>	<u>21 to 65</u>	<u>Over 65</u>	<u>Total No. &amp; Percent of Those Reported</u>
Number	7	65	98	16	186
Percent	4%	34%	53%	9%	100%

##### Seasonal

	<u>Under 5</u>	<u>5 to 21</u>	<u>21 to 65</u>	<u>Over 65</u>	<u>Total No. &amp; Percent of Those Reported</u>
Number	12	58	104	14	188
Percent	6%	31%	55%	8%	100%

##### Total (Permanent & Seasonal Residents)

	<u>Under 5</u>	<u>5 to 21</u>	<u>21 to 65</u>	<u>Over 65</u>	<u>Total No. &amp; Percent of Those Reported</u>
Number	19	123	202	30	374
Percent	5%	32.5%	54%	8.5%	100%

The percentage figures for the age range of residents show that the greatest number of people fall into the 21 to 65 year old age range. This seems to further amplify the "family-type" population although a large percentage of families are 2-member families. The 3 and 4-member families make up the next largest percentage groups.

An interesting feature pointed up in the statistics for the Permanent Resident population is the large percentage groups of 1 and 2-member families.



Question No. 5 In what general income range would you place your family?

<u>Permanent</u>	<u>No. Families</u>	<u>Percent of Reported Families</u>
\$ 5,000 - 7,000	2	5%
7,000 - 9,000	3	7%
9,000 - 11,000	14	24%
11,000 - 13,000	7	14%
13,000 - 15,000	6	13%
15,000 - 17,000	3	7%
17,000 - 19,000	0	0
Over 19,000	<u>15</u>	<u>30%</u>
Total Families Replying	50	100%

<u>Seasonal</u>	<u>No. Families</u>	<u>Percent of Reported Families</u>
\$ 5,000 - 7,000	1	2%
7,000 - 9,000	0	0
9,000 - 11,000	0	0
11,000 - 13,000	3	8%
13,000 - 15,000	2	4%
15,000 - 17,000	2	4%
17,000 - 19,000	4	9%
Over 19,000	<u>29</u>	<u>73%</u>
Total Families Replying	1	100%

<u>Total</u>	<u>No. Families</u>	<u>Percent of Reported Families</u>
\$ 5,000 - 7,000	3	3.2%
7,000 - 9,000	3	3.2%
9,000 - 11,000	14	15.4%
11,000 - 13,000	10	10.9%
13,000 - 15,000	8	9.2%
15,000 - 17,000	5	5.4%
17,000 - 19,000	4	4.4%
Over 19,000	<u>44</u>	<u>48.3%</u>
	91	100.0%



The replies to question number 5 indicate a population with a family income average considerably higher than that found in most North Carolina cities.

The largest percentage groups reporting for both permanent and seasonal residents can be found in the Over \$19,000 per year bracket. The next largest percentage groups rest within the \$9,000 to \$13,000 brackets.

This high family income average would indicate that the majority of residents and property holders are not bound by economics in their choice of their social, recreational, economic and commercial activities.

Of special note is the fact that 73 percent of the Seasonal Residents replying reported an income of over \$19,000, as contrasted to only 30 percent of the permanent residents replying to the question.

Question No. 6 What are the occupations of the working members of the family?

Replies (Includes both Permanent and Seasonal)

	<u>No. Replying</u>	<u>Percent Replying</u>
Professional & Semi-Professional	51	45%
Managerial Positions/ Business	48	43%
Skilled Workers	7	6%
Unskilled Workers	2	3%
Armed Services	<u>2</u>	<u>3%</u>
Totals	110	100%

Replies to this question indicate that the labor force is chiefly distributed among the Professional/Semi-Professional, Managerial and Business types of occupations. Approximately 88 percent of the reporting labor force can be found within these areas.





Question No. 7 How many family members work outside Wrightsville Beach? (Permanent Residents)

Replies

<u>Place</u>	<u>No. of Replies</u>	<u>Percent of Total Replying (Perm) Residents</u>
Wilmington	43	81.0%
New Hanover County	1	1.8%
Burgaw	1	1.8%
Six Surrounding Counties	2	3.6%
Greensboro	1	1.8%
Piedmont Airline	1	1.8%
Immediately Outside Corporate Limits	2	3.6%
Farming	<u>2</u>	<u>3.6%</u>
	53	100.0%

This question indicates that Wrightsville Beach does have a large percentage of its residents employed in Wilmington. One deduction which might be made from this indication is that as Wilmington grows commercially and economically Wrightsville Beach will feel the impact in terms of population growth and work force composition. In this context it would be highly feasible, from a developmental standpoint, for Wrightsville Beach to concentrate on quality residential development rather than upon commercial or industrial development. This can be accomplished through the proper use of zoning and subdivision regulations.

Question No. 8 Do you rent cottages, apartments or rooms to summer guests? If yes, how many rooms \_\_\_\_\_; apartments \_\_\_\_\_; cottages \_\_\_\_\_



## Replies

No. RENTERS	ROOMS		APARTMENTS		COTTAGES		TOTAL UNITS	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Perm.	14	1	28		1		60	
Seasonal	13	0	7		8		15	
Total	27	1	35		9		75	

The returns on this particular question were not adequate enough to constitute a truly accurate sample. There is some indication, however, from available figures that apartments are in greatest demand as rental units. This perhaps cites a trend away from conventional family cottage type rentals and could offer some implication as to how rental families have changed in terms of tastes and activities and in purpose for coming to Wrightsville Beach.

### Number of Non-Rentals

#### No. Non-Rentals

Perm	40
Seasonal	33
Total	73

One significant factor the survey seemed to determine was that many of the seasonal residents do not rent their property thus perpetuating a "family beach" life style.

Question No. 9 a. On the average, how many guests do you have renting on:

Winter Months: a. Weekday = b. weekend = c. monthly.

Summer Months: a. Weekday = b. weekend = c. monthly.

b. How many off-street parking spaces are provided for your guests?

There was not a significant number of usable replies to draw any truly useful conclusions from this question.



Question No. 10 From what city or cities do most of your  
guests come to Wrightsville Beach? \_\_\_\_\_

Replies (Permanent and Seasonal Residents)

Total Replies 60

There were 32 different cities in North Carolina. The following cities were mentioned most often: Wilmington (8), Charlotte (6), Durham, Raleigh and Greensboro were all mentioned at least two times.

Other cities mentioned were Fayetteville, Winston-Salem, Salisbury, Pinehurst, Siler City, Goldsboro, Tarboro, Fremont, Asheboro, and Graham.

(Indicates Spread)

There were 28 replies from out of State. The closest to Wrightsville Beach were Virginia, Tennessee, and Georgia; the furthestest away were California, New York and Oklahoma. Others mentioned were Arkansas, New Jersey, Florida (2), Pennsylvania (4), West Virginia, Kentucky (3), Louisiana (2), Illinois, and Ohio.

Four different replies listed "various states."

Question No. 11 Are you the property owner? Yes \_\_\_\_\_ No \_\_\_\_\_  
If not in which city does the property owner live?

See Introduction and replies to question  
Number One.



Question No. 12 Do you feel that apartment buildings (luxury type) to accommodate a permanent and semi-permanent apartment dwelling population would be an asset to Wrightsville Beach?

Replies Yes \_\_\_\_\_ No \_\_\_\_\_

	<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>
Yes	52	33	85 (yes)
No	8	14	22 (no)
Total Replies	60	47	107

Of all permanent and seasonal residents replying to this question, 75 percent indicated a felt need for luxury type apartments at Wrightsville Beach. Twenty-five percent felt no such need.

---

Question No. 13 Do you feel that Wrightsville Beach should increase its number of hotels and motels to accommodate a greater number of short term visitors?

Yes \_\_\_\_\_ No \_\_\_\_\_

Replies

	<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>
Yes	38	33	71 (yes)
No	21	16	37 (no)
Total Replies	59	49	108

Of all residents-permanent and seasonal-replying to the above question, 65 percent felt the need to increase hotel and motel accommodations at Wrightsville Beach. Those who felt no need to increase this type accommodation constituted 35 percent of all those





replying. The figures indicate that a greater percentage of both seasonal residents and permanent residents desire an increase in hotel and motel facilities. There is also an indication that a different type person seeking a different life style is visiting the beach.

Question No. 14 Should Wrightsville Beach be promoted as a convention center? Yes \_\_\_\_\_ No \_\_\_\_\_

Replies

	<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>
Yes	39	35	74 (yes)
No	<u>19</u>	<u>13</u>	<u>32</u> (no)
Total Replies	58	48	106

Of the 106 replies to the above question, 60 percent of all residents who replied expressed a desire to see Wrightsville Beach promoted as a convention center while 39 percent of those replying expressed a negative attitude toward such a project.



Question No. 15 Should future plans include provisions for mobile home parks in the area adjacent to the Wrightsville Beach city limits? Yes \_\_\_\_\_ No \_\_\_\_\_

Replies

	<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>
Yes	10	9	19 (yes)
No	<u>48</u>	<u>42</u>	<u>90</u> (no)
Total Replies	58	51	109

The above question drew one of the largest responses - in a predominantly negative aspect. Of a total of 109 permanent and seasonal residents replying, only 17 percent expressed a desire for mobile home development within the Wrightsville Beach fringe area while 83 percent were against such future development. This reflects a desire on the part of the local populace to upgrade the residential quality of the beach.

Question No. 16 Is there a need for an organized summer recreation program for the residents of Wrightsville Beach?  
Yes \_\_\_\_\_ No \_\_\_\_\_

Replies

	<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>
Yes	28	14	42 (yes)
No	<u>28</u>	<u>28</u>	<u>56</u> (no)
Total Replies	56	42	98

The breakdown of the figures in the 98 replies to the above question indicates that the permanent residents of Wrightsville



Beach are evenly divided on the question, while the majority of seasonal residents are against such a development. Almost 60 percent of all residents replying were not in favor of an organized summer recreation program.

Of those permanent residents who indicated a need for an organized summer recreation program, many made specific suggestions for activities or facilities. Among these suggestions were the following:

<u>Activity or Facility</u>	<u>No. of Requests</u>
(1) Organized Water Sports	7
(2) Tennis Courts	6
(3) Supervised Activities for teenagers	5
(4) Recreation Center	4
(5) Facilities for Baseball, Softball, and Basketball	4
(6) Private Dinner Club	1
(7) Clubs for older people (luncheon, Bridge, Art, books, clubs)	1
(8) Outdoor theater	1
(9) Religious Facilities	1

Question No. 17 This question dealt with the issue of public recreational programs and facilities to accommodate a growing number of tourists and visitors. In order to adequately cover all facets of the issue question No. 17 was divided into three areas:

- 17 a. Should Wrightsville Beach encourage a greater volume of tourists and visitors by creating more public facilities and more public recreational areas such as public beaches, public parking lots, public bathroom and bathhouse facilities, public picnic areas and playgrounds, and a public marina.
- Yes \_\_\_\_\_ No \_\_\_\_\_ Only in some areas \_\_\_\_\_





## Replies

	<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>
Yes	4	3	7 (yes)
No	31	33	64 (no)
Only in Some Areas	24	15	39 (some areas)
Total Replies	59	51	110

The greatest percentage of both permanent and seasonal residents who replied indicated a desire to prevent future expansion of public facilities. The next largest percentage expressed a desire for some expansion but only in Some Areas. Section 17.B presents a profile of what both permanent and seasonal residents desire in terms of public facilities for tourists.

17 b. If the answer to the above question is "yes" or "only in some areas", please check those uses which you would most prefer in Wrightsville Beach.

## Replies

### (1) Public Beaches

<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>	Percentage of <u>Total Replies</u>
14	7	21	19%

### (2) Parking Lots

<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>	Percentage of <u>Total Replies</u>
19	10	29	25%

### (3) Bathhouses and Bathrooms

<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>	Percentage of <u>Total Replies</u>
8	4	12	10%

Year	1900	1910	1920	1930
Population	1,000,000	1,500,000	2,000,000	2,500,000
Area (sq. miles)	100	100	100	100
Density (per sq. mile)	10,000	15,000	20,000	25,000

The following table shows the population of the United States in 1900, 1910, 1920, and 1930. The population in 1900 was 1,000,000. In 1910 it was 1,500,000. In 1920 it was 2,000,000. In 1930 it was 2,500,000. The area of the United States is 100 square miles. The density of the population in 1900 was 10,000 per square mile. In 1910 it was 15,000 per square mile. In 1920 it was 20,000 per square mile. In 1930 it was 25,000 per square mile.

The following table shows the population of the United States in 1900, 1910, 1920, and 1930. The population in 1900 was 1,000,000. In 1910 it was 1,500,000. In 1920 it was 2,000,000. In 1930 it was 2,500,000. The area of the United States is 100 square miles. The density of the population in 1900 was 10,000 per square mile. In 1910 it was 15,000 per square mile. In 1920 it was 20,000 per square mile. In 1930 it was 25,000 per square mile.

Year	1900	1910	1920	1930
Population	1,000,000	1,500,000	2,000,000	2,500,000
Area (sq. miles)	100	100	100	100
Density (per sq. mile)	10,000	15,000	20,000	25,000

Year	1900	1910	1920	1930
Population	1,000,000	1,500,000	2,000,000	2,500,000
Area (sq. miles)	100	100	100	100
Density (per sq. mile)	10,000	15,000	20,000	25,000

(4) Children's Playground

<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>	Percentage of <u>Total Replies</u>
13	7	20	17%

(5) Amusement Park

<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>	Percentage of <u>Total Replies</u>
2	3	5	4%

(6) Public Boat Ramp

<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>	Percentage of <u>Total Replies</u>
19	12	31	26%

The largest percentage of those replying positively to the questionnaire expressed a preference for increased public parking and for a public boat ramp; also, additional public beaches rated high in this particular context. Other responses to this particular question included a community center, a private dinner club and dog and cat controls. A significant feature is the relatively small number of responses relative to public facilities for Wrightsville Beach.

17 c. What facilities including those listed above would you prefer to see located outside the Wrightsville Beach corporate limits but within 3 miles of town?

Replies

	<u>Permanent</u>	<u>Seasonal</u>	<u>Total</u>
Boat Ramp	12	3	15
Golf Course	1	1	2
Amusement Park	4	1	5
Tennis Courts	1	0	1
Playground-Picnic Area	1	0	1
Shopping Center	1	0	1
Private Industry	1	0	1
Discos Place	1	0	1
	22	5	27

1870

Jan	1	100	100
Feb	1	100	100
Mar	1	100	100
Apr	1	100	100
May	1	100	100
Jun	1	100	100
Jul	1	100	100
Aug	1	100	100
Sep	1	100	100
Oct	1	100	100
Nov	1	100	100
Dec	1	100	100

1871

Jan	1	100	100
Feb	1	100	100
Mar	1	100	100
Apr	1	100	100
May	1	100	100
Jun	1	100	100
Jul	1	100	100
Aug	1	100	100
Sep	1	100	100
Oct	1	100	100
Nov	1	100	100
Dec	1	100	100

1872

Jan	1	100	100
Feb	1	100	100
Mar	1	100	100
Apr	1	100	100
May	1	100	100
Jun	1	100	100
Jul	1	100	100
Aug	1	100	100
Sep	1	100	100
Oct	1	100	100
Nov	1	100	100
Dec	1	100	100

1873

Jan	1	100	100
Feb	1	100	100
Mar	1	100	100
Apr	1	100	100
May	1	100	100
Jun	1	100	100
Jul	1	100	100
Aug	1	100	100
Sep	1	100	100
Oct	1	100	100
Nov	1	100	100
Dec	1	100	100

1874

Jan	1	100	100
Feb	1	100	100
Mar	1	100	100
Apr	1	100	100
May	1	100	100
Jun	1	100	100
Jul	1	100	100
Aug	1	100	100
Sep	1	100	100
Oct	1	100	100
Nov	1	100	100
Dec	1	100	100

1875

Jan	1	100	100
Feb	1	100	100
Mar	1	100	100
Apr	1	100	100
May	1	100	100
Jun	1	100	100
Jul	1	100	100
Aug	1	100	100
Sep	1	100	100
Oct	1	100	100
Nov	1	100	100
Dec	1	100	100

The significant aspect of the above figures is the sparsity of replies. The response seems to indicate a rather strong interest in a boat ramp but no great need or desire for other recreational facilities within the fringe area.

The cogent aspect of the above figures is the sparsity of replies to this particular section of Question 17. However, the response given seems to indicate as was shown in section B. of question 17 a rather strong interest in a boat ramp but no widespread interest in this particular facility or others mentioned.

Question No. 18 Should the town maintain the eastern beach on Banks Channel as a Public Beach?  
Yes \_\_\_\_\_ No \_\_\_\_\_

#### Replies

	<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>
Yes	15	4	19
No	38	37	75
Total Replies	53	41	94

The above percentages, 79 percent indicate a general desire to maintain the eastern beach on Banks Channel as a private beach and is in line with the low number of responses to question 16 which dealt with a variety of public facilities.

Question No. 19 While in Wrightsville Beach, in what town do you do most of your shopping?

#### Replies

	<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total</u>	<u>Total Percentage of those Replying</u>
Wilmington	31	24	55	68%
Wrightsville	7	18	25	32%
Totals	38	42	80	100%





Of the 80 persons, permanent and seasonal, replying to question No. 19, 66 percent do most of their shopping in Wilmington, while 32 percent do most of their shopping in Wrightsville Beach. Over 70 percent of those permanent residents replying indicated that they do most of their shopping in Wilmington.

Question No. 20 Please check those commercial activities which you would like to see expanded or introduced in Wrightsville Beach?

Replies (Listed in order of the total number of responses.)

<u>Commercial Activity</u>	<u>Permanent Residents</u>	<u>Seasonal Residents</u>	<u>Total Suggestions</u>
Drugstore	36	17	53
Super Market	22	17	39
Restaurant	18	17	35
NONE	16	16	32
Minute Markets	13	9	22
Laundry	4	7	11
Appliance			
Hardware	6	2	8
Clothing Store	4	4	8
Sporting Goods	4	3	7
Book Store	<u>1</u>	<u>0</u>	<u>1</u>
Total Suggestions	124	92	216

The above suggestions submitted by respondents indicate that there is not a great concern with commercial business expansion in Wrightsville Beach. This result seems to concur with the results derived from question No. 19. Most shoppers do their major business in Wilmington with incidental needs such as medicine and food being supplied by available commercial facilities at Wrightsville Beach.



1900	1901	1902	1903
1904	1905	1906	1907
1908	1909	1910	1911
1912	1913	1914	1915

The following table shows the results of the  
 experiments conducted during the year 1915.  
 The results are given in the following table.

Experiment	1915	1916	1917	1918
1	100	100	100	100
2	100	100	100	100
3	100	100	100	100
4	100	100	100	100
5	100	100	100	100
6	100	100	100	100
7	100	100	100	100
8	100	100	100	100
9	100	100	100	100
10	100	100	100	100

The results of the experiments conducted during the year 1915 are given in the following table. The results are given in the following table.

neighborhood convenience stores and probably reflects a general feeling against scattered commercial development in Wrightsville Beach? Yes No

### Replies

#### Permanent and Seasonal Residents

Yes	34
No	<u>72</u>
Total Replies	106

The above figures indicate a rather strong sentiment against neighborhood convenience stores and probably reflects a general feeling against scattered commercial development in Wrightsville Beach.

Question No. 22 Do you have any suggestions for improving Wrightsville Beach?

### Replies

Although the responses to this question are arranged and represented in terms of numbers, any response could have a lasting impact upon the direction and quality of development for Wrightsville Beach.

Clean Up - 22 - Replies The suggestion most often mentioned by residents of Wrightsville Beach was that of a general cleanup of the town. More stringent enforcement of litter laws drew the largest response. Other responses: a Cleanup-Paint-Up-Fix-Up campaign, a cleanup of vacant lots, and a regulation of garbage containers.

Municipal Improvement - 18 - Replies Various projects for municipal improvement made up the second largest number of individual suggestions. The following were among the list of replies: Improvement of fresh water supply; general paving and street improvement especially in the Harbor Island Sector; elimination of winter water charges for seasonal residents; completion of the berm; public bathhouses and parking areas under state control and

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financed by non-residents; sidewalks for the southern sector of town; clearer marking of one-way streets; strict enforcement of speeding laws on Waynick Avenue; stricter policing of beach strand; a municipal government center; street lights in needed areas; general improvement of day facilities. One suggestion fitting ironically into this series was - no additional taxes.

City-Regional Development - 9 - Replies A third major concern for individuals was the City-Regional Development issue. Three persons suggested the development of Wrightsville Beach as a convention center. Other suggestions included; a bridge across Masonboro Inlet; family camp sites; more motels and cooperative living areas; Little Theater facilities and activities; the purchase of parks and open space to relieve high-density residential development; a strict control of commercialism in order to preserve a "family-vacation-cottage" community; measures to keep out masses of campers.

Zoning and Building Codes - 9 - Replies This area ranked with the City-Regional Development issue among respondents. Six individuals suggested a general upgrading of existing buildings through strict inspection and condemnation procedures. Additional suggestions were for zoning and building laws to more adequately control 3 and 4-family residences; a general improvement of apartment buildings; a long-range plan augmented by tightly controlled zoning laws to offset creeping commercialism.

Ocean-Beach - 8 - Replies Responses in the context of ocean and beach control and development included the following: two public beaches established for visitors with public parking facilities; the prohibition of foods and drinks on existing beaches; more strict policing of small boats; extension of life guard service above the Surf Club; a summer Beach Patrol; and three individuals suggested the limitation of public beach area.

Parking - 6 - Replies Another matter causing a relatively large degree of concern for individuals was that of parking. The following suggestions were offered: Improve parking and widen streets at the downtown intersection; parking meters for congested areas; a more stringent schedule of parking fines; improved

THE UNIVERSITY OF CHICAGO  
DIVISION OF THE PHYSICAL SCIENCES  
DEPARTMENT OF PHYSICS

PHYSICS 341  
LECTURE 10  
THERMAL CONDUCTIVITY  
AND THERMAL EXPANSION

1. Thermal conductivity is a measure of the ability of a material to conduct heat. It is defined as the amount of heat that flows through a unit area of a material in unit time, per unit temperature gradient. The SI unit of thermal conductivity is  $\text{W m}^{-1} \text{K}^{-1}$ . The thermal conductivity of a material depends on its atomic structure and the nature of the bonds between the atoms. In general, the thermal conductivity of a material increases with increasing temperature.

2. Thermal expansion is the tendency of matter to change in volume in response to a change in temperature. The coefficient of thermal expansion is a measure of the change in length or volume of a material per unit change in temperature. The SI unit of the coefficient of thermal expansion is  $\text{K}^{-1}$ . The coefficient of thermal expansion of a material depends on its atomic structure and the nature of the bonds between the atoms. In general, the coefficient of thermal expansion of a material increases with increasing temperature.

3. The thermal conductivity and thermal expansion of a material are related. In general, the thermal conductivity of a material increases with increasing thermal expansion. This is because the thermal expansion of a material leads to an increase in the average distance between the atoms, which in turn leads to an increase in the thermal conductivity.

4. The thermal conductivity and thermal expansion of a material are also related to the specific heat of the material. In general, the thermal conductivity of a material increases with increasing specific heat. This is because the specific heat of a material is a measure of the amount of energy that is required to raise the temperature of the material, and the thermal conductivity of a material is a measure of the ability of the material to conduct heat.



parking at Johnny Mercer's Pier; increased responsibility for all property-owners to provide for off street parking.

Beautification - 4 - Replies The aesthetic quality of Wrightsville Beach was a chief matter of concern for 4 respondents. Their suggestions were: the beautification of the general entrance way to Wrightsville Beach; the beautification of parks and plazas; a general planting program featuring trees such as palms; and the creation of a small park with rest benches overlooking the ocean.

Random Suggestions - 25 - Replies This category includes the largest number of suggestions. They are:

- (1) Leave the beach as it is.
- (2) Eliminate surfers and hippies.
- (3) Control of dogs and pets.
- (4) An annual fish fry for U. N. C.-Wilmington Students who in return could help rid the beach of litter.
- (5) Year round recreation for teenagers.
- (6) Discontinue issuance of beer licenses.
- (7) Discouragement of tourist - attracting facilities.
- (8) Hire a good, creative city planner.
- (9) Better mail delivery service to alleviate parking problems at post office.
- (10) Discourage real estate promoters unless there is a general town vote on the matter.
- (11) Instigate local fishing tournaments.
- (12) "Do not" raise taxes.





SECTION III

RECOMMENDED ACTION  
FOR  
WRIGHTSVILLE BEACH



Recommended Action For Wrightsville Beach:

1. The Town Board should adopt land development and redevelopment policies in a comprehensive Land Development Plan that will preserve a residential family beach lifestyle for permanent residents while providing for an ever increasing seasonal population with changing tastes and leisure habits.
2. The Planning Board should present a list of specific recommendations for local improvements to the Town Board for the fiscal year 1970-71. The list of proposals should include suggestions such as an annexation study, land purchases, a capital improvements study, an examination of subdivision procedures, and other improvements. Cost estimates should be supplied with each proposal.
3. The Town Board should prepare the town's codes and ordinances based upon the policies adopted in a Land Development Plan.
4. In order to insure the upgrading of existing structures and the quality of future buildings on Wrightsville Beach the town should adopt a strict code enforcement policy. In so doing, the following steps should be taken:
  - a. Strict enforcement of North Carolina State Building Code.
  - b. The adoption and enforcement of the North Carolina Residential Building Code.
  - c. The updating and revision of the present Wrightsville Beach Building Code so that it correlates with the aforementioned State Codes.
  - d. Provision of an adequate staff to insure a systematic program of enforcement. This could involve hiring additional personnel or contracting with the Wilmington-New Hanover County Inspection Department for inspection services.
  - e. Consideration of a Nationally Recognized Minimum Housing Code.

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5. The Town Board should study the feasibility of a bond issue to provide funds for the paving and improving of streets in Wrightsville Beach and for the widening up to three (3) lanes of Linnia Avenue on the segment between Atlantic Street and Laticia Street. If a bond issue proves unfeasible then other sources of revenue - either state or private - should be investigated.

6. The Town Board should see that all street names are plainly marked and that all one-way streets are clearly designated.

7. The Town Board should take immediate steps to increase the parking facilities at Wrightsville Beach.

a. Several North Carolina cities have acquired land with non-tax revenue and rely on meter revenue for maintenance.

b. The Town could enter into lease agreements with private owners for off-street parking, with various arrangements for improvements, maintenance and operation expenses.

c. The General Statutes of North Carolina authorize and set down in detail the procedures for establishing parking authorities. A parking authority consists of a group of citizens appointed by the city whose major responsibility would be to provide adequate parking for crucial areas. The authority would secure land by purchase, gift or lease, develop the land into a parking facility and manage the facility like a business and as a public service. The advantage of the authority system is that it establishes a group working solely to provide parking.

d. The Town should authorize an immediate parking survey to determine the best possible arrangement and use of space which is already available.

e. The aid of merchant groups and property owners should be enlisted in providing more parking space.



8. General Business District Improvement

The Town in cooperation with local merchants and business men should conduct a General Business District Area Study. The study should aid in the general upgrading of the CBD and provide those social and cultural amenities desired by the Wightville Beach Population.

Initial steps of action might include the following:

- a. A general clean-up and paint-up project to upgrade existing buildings.
- b. General improvement and coordination of business entrances and loading areas.
- c. An investigation into the possibility of acquiring land through business investors between Atlanta Street and Latimer Street for needed commercial expansion.

New businesses to be added within the area might include:

- 1 - Drugstore
  - 2 - Restaurant
  - 3 - Supermarket
  - 4 - A teen-age establishment
- d. Creation of additional parking spaces particularly at the intersections of Stone Street and Lumina Avenue and Columbia Street and Lumina Avenue.

9. Recreation for Seasonal and Permanent Residents

The returns on the survey questionnaire sent out by the Planning Board indicated a recreation need primarily for teenagers, young adults and middle aged groups.

Specific needs most often cited were: an athletic field, tennis courts, a recreation center, and organized water sports and activities. In addition a club for adults was frequently suggested. In dealing realistically with this problem, the following actions might be undertaken by the Town and interested citizens groups.

- a. Derive an arrangement with school officials so that the town's elementary school facilities might be used





- for (1) athletic fields, (2) a recreation center, (3) little theater activities, and (4) club meetings.
- b. Acquire land (vacant lots) through purchase, lease or donation for the construction of tennis courts. Maintenance costs could be incurred by those who use the courts in cooperation with the town.
- c. The Town should specify a certain portion of the Banks Channel Beach area for use as a summer water sports facility. Various instructors in areas such as boating and swimming could be hired, and the costs of the various programs could be covered with fees paid by participants.
- d. Existing playgrounds should be cleaned and upgraded either by the Town or by interested civic groups.

#### 10. Zoning Controls

The Wrightsville Beach Zoning Ordinance should be revised in compliance with a comprehensive Land Use Plan and should deal primarily with problems in the following areas:

- a. Limitation of scattered commercial areas.
- b. Proper and safe location of high-density dwelling areas and hotel - motel sectors.
- c. The general upgrading of minimum lot sizes in the older sectors of the town.
- d. The preservation of natural and open space.

#### 11. Beach Control

- a. Provide additional, metered parking where possible at the Crystal Pier and at Johnny Mercer's Pier.
- b. Adopt a strict anti-litter ordinance which would affect the above areas.
- c. Increase the staff of the summer Beach Patrol.

#### 12. Beautification

- a. The Town Board should create a Beautification Commission which would be responsible for the year round appearance of Wrightsville Beach. The Commission could work with the National Beautification Organizations, the N. C. Governor's Beautification Commission and local garden and civic clubs in implementing appropriate programs for the town.

1. The first part of the paper is devoted to a general discussion of the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters  $\alpha$  and  $\beta$ . It is shown that the system has solutions for all values of the parameters  $\alpha$  and  $\beta$  if the function  $f(x)$  is continuous and has a bounded derivative.

2. In the second part of the paper the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters  $\alpha$  and  $\beta$  is solved. It is shown that the system has solutions for all values of the parameters  $\alpha$  and  $\beta$  if the function  $f(x)$  is continuous and has a bounded derivative. The solutions are found in explicit form.

3. In the third part of the paper the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters  $\alpha$  and  $\beta$  is solved. It is shown that the system has solutions for all values of the parameters  $\alpha$  and  $\beta$  if the function  $f(x)$  is continuous and has a bounded derivative. The solutions are found in explicit form.

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5. In the fifth part of the paper the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters  $\alpha$  and  $\beta$  is solved. It is shown that the system has solutions for all values of the parameters  $\alpha$  and  $\beta$  if the function  $f(x)$  is continuous and has a bounded derivative. The solutions are found in explicit form.

- b. A particular and immediate project should be the improvement of the appearance of major entranceways to Wrightsville Beach through planting, screening and fencing. This could be accomplished with the cooperation of the town, the State Highway Commission, the New Hanover County Agriculture and Home Agents, local civic and garden clubs, and private property owners.
- c. A local committee should be appointed by the Town to head a summer clean-up, paint-up, fix-up organization; this should prove effective within the older sectors of town.

13. Subdivision Control

Existing subdivision regulations and procedures for Wrightsville Beach should be updated and revised in order to adequately cope with residential development within the northern and western sectors of town.

14. New Development

The Town Board and the Planning Board should work closely with area developers and builders in developing vacant land for use as sites for luxury apartments, condominium housing, and hotels and motels. Such a program could be particularly effective for vacant areas on the main beach as well as for vacant areas on Harbor Island along Highways 76 and 74.

15. Convention Center Complex

A special committee should be selected to do a feasibility study on the development of a convention center complex on Harbor Island. In doing such a study prime consideration would be: (1) traffic circulation, (2) accommodations for short-term visitors, (3) quality of vacant land, (4) compatibility of land uses should such a complex be erected, and (5) methods of financing such a venture.



16. Economy and Industry

In the context of present trends of growth for Wrightsville Beach industrial growth should be discouraged, and the town's economic growth should be discouraged unless a specific need or cogent reason arises which would merit consideration of expansion.









